

3.8 Highest Common Factor

We can find the common factors of any two numbers. We now try to find the highest of these common factors.

What are the common factors of 12 and 16? They are 1, 2 and 4.

What is the highest of these common factors? It is 4.

What are the common factors of 20, 28 and 36? They are 1, 2 and 4 and again 4 is highest of these common factors.

Try These

Find the HCF of the following:

- (i) 24 and 36 (ii) 15, 25 and 30
 (iii) 8 and 12 (iv) 12, 16 and 28

The Highest Common Factor (HCF) of two or more given numbers is the highest (or greatest) of their common factors. It is also known as Greatest Common Divisor (GCD).

The HCF of 20, 28 and 36 can also be found by prime factorisation of these numbers as follows:

$$\begin{array}{r|l} 2 & 20 \\ \hline 2 & 10 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 28 \\ \hline 2 & 14 \\ \hline 7 & 7 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 36 \\ \hline 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

Thus, $20 = \boxed{2} \boxed{2} 5$
 $28 = \boxed{2} \boxed{2} 7$
 $36 = \boxed{2} \boxed{2} 3 \quad 3$

The common factor of 20, 28 and 36 is 2 (occurring twice). Thus, HCF of 20, 28 and 36 is $2 \times 2 = 4$.



EXERCISE 3.6

1. Find the HCF of the following numbers :

- (a) 18, 48 (b) 30, 42 (c) 18, 60 (d) 27, 63
 (e) 36, 84 (f) 34, 102 (g) 70, 105, 175
 (h) 91, 112, 49 (i) 18, 54, 81 (j) 12, 45, 75

2. What is the HCF of two consecutive

- (a) numbers? (b) even numbers? (c) odd numbers?